

## CLAIMS

What is claimed is:

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1. A method of speculatively issuing memory requests while maintaining a specified packet order comprising:
  - receiving a first packet and a second packet for forwarding, wherein said first packet is received prior to said second packet;
  - 10 sending a first memory request corresponding to said first packet;
  - sending a second memory request corresponding to said second packet prior to receiving a first memory reply corresponding to said first memory request; and
  - 15 forwarding said first packet prior to forwarding said second packet.
2. The method as described in Claim 1 wherein said first packet and said second packet are maintained in a transfer order queue.
- 20 3. The method as described in Claim 2 wherein said second memory request is sent prior to said second packet moving to a head of said transfer order queue.
- 25 4. The method as described in Claim 1 wherein said first memory request is to request resource to forward said first packet.
5. The method as described in Claim 1 further comprising receiving a second memory reply prior to forwarding said first packet.
- 30 6. The method as described in Claim 1 further comprising receiving said first memory reply prior to forwarding said first packet.
7. The method as described in Claim 1 wherein said first packet 35 comprises an internet protocol packet.

8. A network method comprising:  
receiving a first packet and a second packet for forwarding;  
sending a first memory request corresponding to said first  
packet; and  
5 sending a second memory request corresponding to said  
second packet prior to forwarding said first packet.

9. The method as described in Claim 8 wherein said first packet  
and said second packet are maintained in a transfer order queue.

10 10. The method as described in Claim 9 wherein said second  
memory request is sent prior to said second packet moving to a head of said  
transfer order queue.

15 11. The method as described in Claim 8 wherein said first memory  
request is to request resource to forward said first packet.

12. The method as described in Claim 8 further comprising  
receiving a second memory reply prior to forwarding said first packet.

20 13. The method as described in Claim 8 wherein said first memory  
reply is received prior to forwarding said first packet.

25 14. The method as described in Claim 8 wherein said first packet  
comprises an internet protocol packet.

15. A networking device comprising:  
a first packet processor comprising:  
an input interface having a port to accept  
30 incoming packets;  
an input memory coupled to said input interface  
for temporarily storing said packets in a queue arranged  
by a receiving order;  
a second packet processor comprising:

an output interface having a port to send said  
packets out of said networking device;  
an output memory coupled to said output interface  
for temporarily storing said packets;  
5 a switching fabric coupled to said first packet processor and  
said second packet processor for conveying information between said  
first packet processor and said second packet processor; and  
said first packet processor also for sending a memory request  
corresponding to a packet which is not at a head of said queue to said  
10 second packet processor.

16. The networking device as described in Claim 15 wherein said  
first packet processor is also for receiving a memory reply message from  
said second packet processor corresponding to a memory request for a  
15 packet.

17. The networking device as described in Claim 16 wherein said  
first packet processor is also for sending said packet to said second packet  
processor if said packet is at the head of said queue.

20 18. The networking device as described in Claim 17 wherein said  
second packet processor is also for receiving said packet at said second  
packet processor.

25 19. The networking device as described in Claim 15 wherein said  
second packet processor is also for sending said packet out of said  
networking device.

20. The networking device as described in Claim 15 further  
30 comprising a plurality of packet processors in addition to said first and said  
second packet processors coupled to said switching fabric.

21. The networking device as described in Claim 15 wherein said  
memory request comprises a first portion to indicate that said packet is not at  
35 a head of said queue.

22. The networking device as described in Claim 15 wherein said packet is an internet protocol packet.

5 23. A networking device comprising a means for sending a memory request corresponding to a second packet prior to sending a first packet, wherein said first packet is received prior to receiving said second packet.

10 24. The networking device as described in Claim 23 wherein said means for sending a memory request further comprises means for maintaining the transfer order of said first and said second packets.

15 25. The networking device as described in Claim 24 wherein said means for maintaining the transfer order of said first and said second packets comprises a transfer order queue.

20 26. The networking device as described in Claim 25 wherein said means for sending a memory request further comprise sending said memory request for said second packet prior to said second packet reaching a head of said transfer order queue.

25 27. The networking device as described in Claim 23 wherein said means for sending a memory request further comprises means to request resource to transfer said packet.

28. The networking device as described in Claim 23 wherein said means for sending a memory request further comprises means for accepting a memory reply prior to forwarding said packet.

30 29. The networking device as described in Claim 28 wherein said means for accepting a memory reply further comprises means to assign network resource to transfer said packet.

30. The networking device as described in Claim 23 wherein said packet is an internet protocol packet.

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